

**Ernest Orlando Lawrence  
Berkeley National Laboratory**

**EARTH SCIENCES DIVISION**

**ES&H PLAN**

**February 2002**

Division Director: Gudmundur Bodvarsson  
Division Safety Coordinator: Larry McLouth

## INTRODUCTION

The Earth Sciences Division (ESD) at Berkeley Laboratory performs fundamental and applied geosciences research related to subsurface energy resources, nuclear waste disposal, environmental restoration and ecology, and climate change. Core capabilities include: vadose and saturated zone hydrology, fracture hydrology, atmospheric sciences, petroleum and geothermal reservoir engineering, seismic and electromagnetic geophysics, isotope geochemistry, and rock and soil physics.

Scientifically, ESD is organized by Resource Departments (Geophysics-Geomechanics; Hydrogeology and Reservoir Dynamics; Geochemistry and Microbial Ecology and Environmental Engineering), that serve as the intellectual homes for every staff member. Department Heads are responsible for staffing, promotions, and training matters. Departments are further divided into Groups, each with a scientific focus, led by a Group Leader. Departments provide the people and the Facilities to do the research, but do not control research funds.

Research in ESD is conducted within the context of four large Research Programs (Nuclear Waste; Energy Resources; Fundamental and Exploratory Research; Environmental Remediation Technology, and Climate Variability and Carbon Management) that are aligned to our major DOE funding sources. Program Heads and their designees (e.g., Group Leaders and Program Coordinators) are the principal points-of-contact between ESD and DOE, and they share a major responsibility for sustaining and building programs. Every member of the ESD scientific/technical staff is assigned to work on one or more projects in these four Programs. Because many employees work on more than one project during a fiscal year, it is not uncommon that an employee will have more than one *pro tem* immediate scientific supervisor. A Scientist can be the Principal Investigator and line manager for one project and can be a participant on another project. Each employee has but one overall permanent supervisor.

A current ESD Organization Chart is included in Appendix 1.

ESD is committed to performing work safely and in a manner that ensures protection of employees, the public, Laboratory assets and the environment. ESD's Program line management, its staff, contractors and guests are responsible and accountable for the safe performance of work, and will exert sufficient care, and provide resources toward the safe conduct of its operations. ESD will demonstrate by means of its internal ES&H systems that it is performing the five ES&H core functions and achieving the seven Guiding Principles described in the Laboratory's Integrated Safety Management System (ISMS).

## ISMS IMPLEMENTATION WITHIN ESD

The Berkeley Laboratory's ES&H policies and requirements are contained in the Regulations & Procedures Manual (RPM) <http://www.lbl.gov/Workplace/RPM/>, the Health & Safety Manual (PUB-3000) <http://www.lbl.gov/ehs/pub3000/>, the Integrated Environment, Health & Safety Management Plan (PUB 3140) <http://www.lbl.gov/ehs/ism/Title.html> and the Self-Assessment Program Implementation Plan (PUB-5344) [http://www.lbl.gov/ehs/oa/02prog\\_docs/pub\\_53440201.pdf](http://www.lbl.gov/ehs/oa/02prog_docs/pub_53440201.pdf). These policies and procedures implement the contractual requirements between the Department of Energy and UC Berkeley contained in Contract 98 <http://labs.ucop.edu/internet/comix/>, Appendices F (Performance Measures) and G (Directives). This Integrated Safety Management Plan (referred to as the Plan) explains how these policies and procedures will be implemented in ESD and defines the roles and responsibilities for ESD employees, visitors, participating guests and contractors. The Plan will be reviewed, and modified if necessary, as part of the Division's Annual Self-Assessment to assure continuous improvement.

During the past year, self-assessment activities identified three opportunities for improvement that should be addressed in ESD. These are as follows:

1. The Division Director and line management (Department and Program Heads, Principal Investigators, and Group Leaders) need to demonstrate greater commitment to ES&H concerns and to involve the Division Council in safety concerns of Division wide impact.
2. ESD should consider policies, performance expectations and actions that place safety responsibilities on line managers other than the Deputy/ES&H Coordinator.
3. ESD injuries and accident rates have increased significantly from last year during this reporting period. The Division should develop a plan to address this issue.

This Plan has been updated to address these issues and includes clear expectations for safety performance of all work conducted within ESD.

***ESD employees, visitors, participating guests and contractors are expected to read, understand and follow the requirements of this Plan. Furthermore, each employee's safety performance will be measured against the provisions of this Plan during his/her annual Performance/Progress Review (P2R). It should be noted that an employee can not attain an overall rating of "E" (exceeds expectations) if any one expectation, including safety, is rated at or below an "I" (improvement needed).***

### Responsibility and Accountability

All employees in ESD, regardless of job classification, seniority, or supervisory responsibilities, are responsible for working safely. Furthermore, Department and Program Heads, Principal Investigators, Group Leaders, supervisors and those serving in management roles or having management titles, have a special and unique responsibility for this by providing safety leader-

ship. This section discusses the safety responsibilities of all ESD personnel, visitors and participating guests.

The **Division Director** is responsible and accountable to the Laboratory Director for assuring that demonstrable policies and programs are established and implemented to support and comply with the Laboratory's ES&H policies and requirements. The Division Director shall lead discussions on relevant safety issues at Division Council meetings and Division wide town hall meetings. Safety shall be an agenda item at these meetings. He shall also maintain his visibility and demonstrate line management commitment to ES&H by periodically walking through Division space. The Division Director shall review and approve this Plan on an annual basis. Furthermore, he shall hold all ESD staff accountable for understanding and complying with its provisions.

The **Division Safety Coordinator** (DSC), appointed by the Division Director, is responsible and accountable to the Division Director for establishing, documenting, disseminating, and tracking Division ES&H policies. In addition, he shall provide quarterly Division ES&H Program Status Reports to the Division Director and provide additional reports to persons and offices of outside organizations with and for whom ESD conducts research. He shall also conduct additional safety surveillances at the request of the ESD Director. The DSC shall provide an annual Self-Assessment Report to the EH&S Division Office of Assessment and Assurance, through the ESD Director. The DSC shall review and revise this Plan annually.

The Division will maintain a **Division Safety Committee**, consisting of the DSC, one representative from each Department and Center, and the EH&S Division Liaison to the Earth Sciences Division. The Division Director will participate on an *ex officio* basis. With input from representatives across the Division, the Safety Committee will monitor the implementation of the Division's ES&H program, identify opportunities for improvement and advise the Division Director on ES&H issues.

The Committee will be chaired by an ESD staff member, appointed by the Division director, and will organize quarterly meetings, set agendas and will record and publish meeting minutes. Copies will be distributed to the Division Director, Division Council and committee members.

**Department Heads and Program Heads** are responsible and accountable to the Division Director for understanding Berkeley Laboratory's ES&H policies. They are further responsible for understanding and complying with the provisions of this Plan and for assuring that it is understood and is being implemented by their line managers (Group Leaders, Principal Investigators and other supervisors). Department Heads and Program Heads shall lead discussions on relevant safety issues at their respective meetings. Safety shall be an agenda item at these meetings.

Department Heads will lead at least two inspections per year of ESD on-site spaces where people in their Department work. These shall be documented on the Earth Sciences Divi-

sion Safety Checklist (Appendix 2). Corrective actions for noted deficiencies will be assigned to the Principal Investigator responsible for the area. Follow up inspections will be conducted by the cognizant Department Head within 60 days in those areas where deficiencies or corrective actions were identified. This is to ensure that corrective actions have been implemented.

Safety responsibilities for Department Heads and Program Heads are further explained in the section entitled, “ES&H Roles Responsibilities within ESD” (below).

**Principal Investigators, Group Leaders and other supervisors** are accountable to their Department Head and Program Heads for understanding and complying with the provisions of this Plan and for assuring that on-site and off-site research activities receive a Safety Analysis Review, that work hazards are identified and controlled, that appropriate safety documents are prepared and/or reviewed, that all work is carried out in a safe manner and in accordance with all Laboratory and Divisional ES&H requirements as set forth in this Plan. Furthermore, they shall ensure that those working for them (including matrixed employees) have completed the Laboratory’s Job Hazards Questionnaire (JHQ), have taken all required EH&S training courses, are properly trained, and that their training statuses are reviewed as part of their annual P2R. Principal Investigators and other supervisors shall also lead discussions on relevant safety issues at their respective meetings. Safety shall be an agenda item at these meetings.

Safety responsibilities for Principal Investigators, Group Leaders and other supervisors are further explained in the section entitled, “ES&H Roles Responsibilities within ESD” (below).

**Employees, participating guests, and contractors** are responsible for understanding and complying with the provisions of this Plan and for knowing and following the ES&H requirements that apply to their work. They are expected to understand, and be trained to deal with the hazards associated with their work, to work safely, to report all unsafe conditions and accidents to their supervisors and to comply with the Division’s ES&H requirements. ESD employees, participating guests, and contractors as well as those matrixed to ESD from other Divisions, are expected to review their JHQ annually, to update it and to complete required training whenever there is a change in job duties. This includes assignments to other ESD Programs.

If there is any question about the safety, health effects, and/or environmental impact of an activity, persons performing the work may stop the work and ask their supervisor, the Division Safety Coordinator or a member of the EH&S Division staff for assistance to resolve the issue before proceeding. It is important to emphasize that the employee’s supervisor should be regarded as the *primary* point of contact for all safety concerns. The safety reporting structure is further defined in the following section entitled, “ES&H Roles and Responsibilities within ESD” (below).

#### ES&H Roles and Responsibilities within ESD

Each employee has one department supervisor who looks after the employee's professional development, training, and mentoring. Except as noted below, the department supervisor is also the employee's ES&H supervisor. In this capacity, the department supervisor is responsible for addressing day-to-day safety issues, such as informing the employee of works hazards and controls, making sure the employee works safely and within controls, answering ES&H questions and investigating accidents.

Exceptions to this may occur when an employee conducts part of his/her work away from his/her normal work environment, such as when working at one of the following sites: (1) an off-site field location, (2) one of the ESD Centers or Labs listed in the following section, or (3) an on-site facility belonging to another Division. In these cases, the employee's *immediate* safety supervisor is the appropriate on-site lab/facility manager, Principal Investigator or the off-site safety manager designated in the particular ESD Off-Site Safety and Environmental Protection Plan.

### Scope of Work Authorized

#### a. General

ESD employees develop tools and knowledge that enhance our understanding of the Earth. They perform three types of research work: (1) theoretical and computational studies in offices, (2) analytical measurements, instrument development, and bench-top physical modeling in wet labs and instrument shops, and (3) geoscience data acquisition at various off-site (also called *field*) locations.

Laboratory measurements and bench-top experiments are conducted in several on-site facilities:

The Center for Isotope Geochemistry (70A)  
The Center for Environmental Biotechnology (70 and 70A)  
The Rock and Soils Laboratories (51-007 and 51F),  
The Environmental Measurements Laboratories (70), and  
Geoscience Measurements Facility (64 and 51-008).

Off-site work, comprising approximately 2.5 to 5 percent of the total annual ESD labor effort, is conducted at various sites owned and managed by federal, state, and private organizations.

#### b. Work Requiring Safety Review and Approval

Line managers will ensure that all work is conducted within authorizations, and that the authorization documentation is reviewed at least annually and updated as personnel assignments and experimental procedures change. To determine the level of safety documentation, worker

training, hazards and hazards control for each project, Principal Investigators will review [LBNL Pub 3000 Chapter 6, Safe Work Authorizations](#) and complete an annual Safety Analysis Review (SAR) (Appendix 3a) at the time of Field Work Proposal (FWP) or proposal submission. Each SAR is reviewed by the DSC, who may consult with ES&H Division professionals for advice on whether the project requires additional safety documentation and ES&H approval such as a: Radioactive Work Authorization (RWA), Sealed Source Authorization (SSA), Activity Hazards Document (AHD) or an Off-Site Safety and Environmental Protection Plan (OSSEPP) (Appendix 3b). An OSSEPP is required for all off-site research activities. An approved OSSEPP, read and signed by each worker, is required before travel will be authorized for off-site work other than an observer's visit. The OSSEPP is intended to document site-specific and work-specific hazards, to inform workers of the hazards present, to identify the training and protective measures needed to perform work safely, to provide emergency information and to serve as a safety training document. The Principal Investigator of each off-site project is responsible for preparing an OSSEPP in accordance with ESD procedures and the health and safety rules, procedures, training requirements and other guidelines established at each off-site facility. Travel authorization for persons assigned to an off-site research project will be contingent on their names and signatures on an approved OSSEPP. These are to be kept on file in the ESD Division Office.

The work presently being carried out in ESD that requires additional ES&H documentation and approvals is listed in Appendix 4.

#### c. Work on the UC Berkeley Campus

Work carried out on the UC Berkeley Campus in spaces under the control of UC Berkeley will be carried out in accordance with the "MEMORANDUM OF UNDERSTANDING BETWEEN UCB AND LBL CONCERNING ENVIRONMENT, HEALTH AND SAFETY POLICY AND PROCEDURES", dated June 20, 1993.

#### Qualifications and Training

*All ESD employees, contractors, and guests shall have the necessary technical skills, knowledge, training, personal protection equipment, and certifications required by law and by Laboratory policy to perform their duties safely and in a manner protective of the Laboratory's assets and the environment.*

Everyone working for more than 30 days in a calendar year at the Berkeley Laboratory will complete a Job Hazards Questionnaire (JHQ). The recommended approach is for the supervisor and employee to complete the JHQ (on-line) <http://www-ehs.lbl.gov/>. The employee's supervisor is responsible for ensuring this is done.

The output of the JHQ process is a list of required and recommended safety training. Each employee's supervisor will ensure the required LBNL training courses are taken within a

90-day period. Depending on the job requirements, the supervisor may specify additional training, such as off-site courses and on-the-job training. Supervisors are responsible for reviewing the training status of their staff each year as part of the P2R process. Employees are responsible for attending required training and for updating the JHQ annually or whenever a change in job duties occurs. This includes temporary assignments to other ESD Programs outside of their home Departments and Programs. (See the section entitled, “ES&H Roles and Responsibilities within ESD). Employees who are assigned to work on off-site projects may be subject to additional site-specific, natural and man-made hazards. The project Principal Investigator shall ensure that these employees are informed of any new hazards as well as any additional controls required for protection. This shall be communicated by the OSSEPP developed for that project. The project Principal Investigator shall also ensure employees take additional training required by the host site.

For persons working at the Berkeley Laboratory for 30 days or less and engaged in field or laboratory research, the type of safety training will be determined by the applicable supervisor. Until they have received proper training, they must work under the direct supervision of their supervisor.

### Worker Safety

*Supervisors will provide employees with a safe workplace and will ensure that work is performed within the authorized controls.*

**Line managers** (i.e., Principal Investigators, supervisors or other individuals having cognizance over a work area) shall ensure that workplace hazards are identified, evaluated and controlled and that employees are provided with and use the appropriate safety controls including personnel protective equipment and proper ergonomic furnishings. Line managers shall also hold each employee accountable for safety as well as recognize ES&H contributions via the P2R process.

Department Heads shall conduct safety walk-throughs of laboratory and office areas under their jurisdiction to identify and correct ES&H deficiencies. The purpose of these walkthroughs is to prevent/reduce accidents by identifying and correcting ES&H deficiencies. They also serve to heighten ES&H awareness among staff members and help them understand that line management considers safety to be a matter of importance. Walkthroughs will be conducted at least twice a year. Principal Investigators will participate in safety walk throughs and shall be held accountable for correcting all identified ES&H deficiencies. Follow up inspections will be conducted by the cognizant Department Head within 60 days in those areas where deficiencies or corrective actions were identified. This is to ensure that corrective actions have been implemented.

Walk throughs will be documented on the enclosed ESD Safety Checklist (Appendix 2).



Accidents that occur within the Division shall be thoroughly investigated to prevent recurrence. The immediate supervisor, injured employee, ESD Safety Coordinator and the EH&S Division Liaison will investigate each injury/illness at the site of its occurrence. Furthermore, supervisors are required to discuss accident investigation findings and corrective actions for all DOE Recordable Accidents at the Division Safety Committee of which the Division Director is an *ex officio* member. This will ensure that ESD management actively participates in investigating accidents and is held accountable for corrective actions to prevent recurrence.

Repetitive motion injuries account for a significant fraction of the injuries and illnesses in ESD. To address this, an ergonomics initiative has been developed. This is aimed at identifying, prioritizing and correcting deficient ergonomic conditions on a graded approach. (See Appendix 5 for notes on a presentation made to the Division Safety Committee by the Division Safety Coordinator on June 19, 2001).

#### Environmental Protection and Waste Management

*ESD will conduct activities in a manner that protects the environment while complying with applicable air quality, water quality, and hazardous waste requirements, including appropriate efforts to prevent pollution and to minimize wastes produced.*

The assigned ESD Custodian (see Appendix 6) is responsible for ensuring that all hazardous, mixed, and radioactive waste added to a Satellite Accumulation Area (SAA), to a Mixed Waste Accumulation Area (MWAA), and/or to a Waste Accumulation Area (WAA), is accurately labeled, characterized and picked-up in a timely fashion. No ESD employee shall add wastes to an SAA, MWAA or WAA without having taken the appropriate LBNL/EHS training and without the knowledge and approval of the assigned custodian.

Working with the DSC, the EH&S Division Waste Management Generator Assistant is responsible for scheduling, conducting, and documenting inspections of all SAAs and for helping ESD staff to improve waste management, to reduce amount of hazardous and mixed waste generated, and to seek on-site treatment strategies. SAA inspections will be conducted quarterly, and the results will be documented and distributed to the designated custodians, as well as the Division Director, Department Heads, and the Division Safety Committee members. WAA inspections will be conducted weekly by the EH&S Division Waste Management Generator Assistant.

#### Balanced Priorities

*ESD management and ESD Principal Investigators will allocate an appropriate amount of resources to ES&H requirements.*

Principal Investigators will factor into their budget plans the costs of safety equipment, employee training, permits, proper chemical storage and inventorying, waste disposal, pollution

prevention, environmental protection, ergonomic furniture/accessories, and facility modifications, unless the latter are covered by institutional funding sources.

To facilitate implementation and execution of the ESD ES&H Program, the following Divisional resources are made available:

0.50 x FTE,	Division Safety Coordinator
0.10 x FTE,	Division Administrative Support.

In addition, EH&S Division will provide 0.7 x FTE on a matrix basis to assist the ESD Safety Coordinator and ESD staff. Resources to be committed are as follows:

0.15 x FTE,	Division Liaison
0.20 x FTE,	Industrial Hygiene and Health Services
0.04 x FTE,	Occupational Safety
0.08 x FTE,	Fire Protection
0.03 x FTE,	Emergency Preparedness
0.08 x FTE,	Radiation Protection
0.02 x FTE,	Environnemental Protection
0.10 x FTE,	Waste Management

## ACCEPTANCES

Signatures

Submitted by:

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Gudmundur Bodvarsson  
ESD Division Director

ES&H Resource Commitment:

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David C. McGraw  
EH&S Division Director

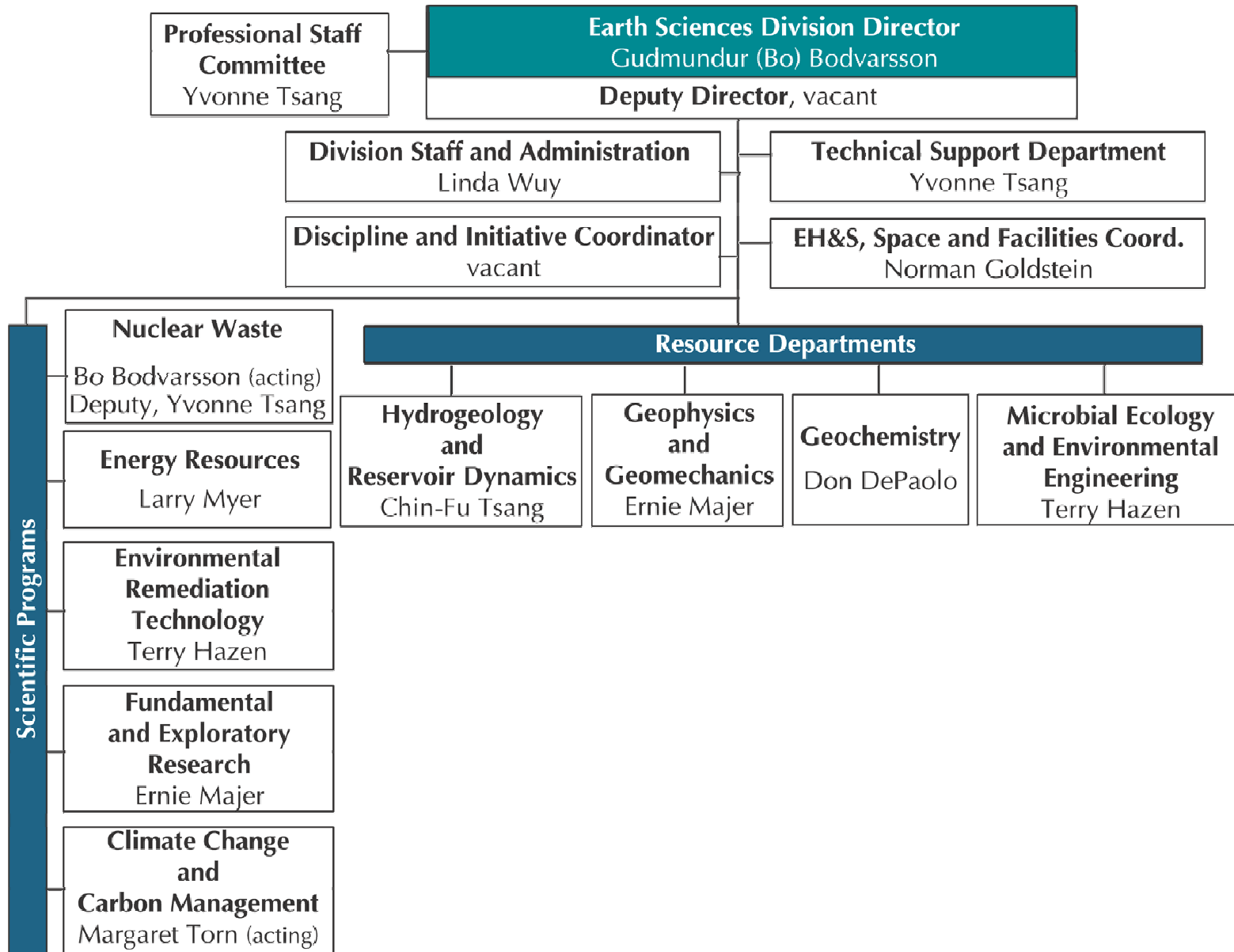
Accepted:

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Charles V. Shank  
Berkeley Laboratory Director

# Appendix 1

## ESD Organizational Chart



## Appendix 2

### Earth Sciences Division Safety Checklist

Building: \_\_\_\_\_  
 Room: \_\_\_\_\_  
 Dept. \_\_\_\_\_  
 Program \_\_\_\_\_

Inspection conducted by: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Person responsible for corrective action: \_\_\_\_\_

No.	Inspection Item	Sat	NI	N/A
1	Proper ergonomic workstation configuration to prevent repetitive stress (>4hrs/day usage)			
2	Duck and cover space			
3	18 inch clearance below fire sprinkler heads			
4	Doorways, corridors & stairs free of obstruction and stairway doors are kept closed			
5	Exit signs clearly visible & emergency evacuation routes posted			
6	Floor is free of slip, trip & fall hazards			
7	Housekeeping is orderly, does not create any hazards & no combustible loading			
8	Seismic anchoring (e.g., equipment, bookshelves, filing cabinets & refrigerators)			
9	Restraints are used (e.g., lips, bungee cords or chains) on shelves			
10	Proper use of extension cords & power strips (no daisy chains)			
11	Use of Ground Fault Circuit Interruptors near sinks & wet/damp areas			
12	Electrical panels (labeled, accessible & have 36 inch clearances)			
13	Proper use & labeling of refrigerators (Note: flamm storage requires rated units)			
14	Posting of laboratory entrances with hazards & contact information			
15	Food/drink stored and consumed in areas where they will not be contaminated			
16	LBNL Emergency Response Flipchart posted & has contact info listed			
17	Containers labeled with chemical name and hazard(s)			
18	Chemical inventory (Bar Codes on containers)			
19	Proper gas cylinder restraint (2 point securing)			
20	Proper chemical storage (corrosive & flammable cabinets) lack of odors & corrosion			
21	Separation of incompatible hazardous materials (acids/bases, flammables/oxidizers)			
22	Secondary containment used for liquids			
23	Fume hoods: uncluttered, spills cleaned up, slots unobstructed & EH&S certification			
24	SAAs: area posting; container selection, labeling & segregation; and use of drip trays			
25	Personal protective equipment (lab coats, safety glasses & gloves)			
26	Access to emergency eyewashes & safety showers			
27	Presence of HF exposure kits (instructions, Ca-gluconate gel & nitrile gloves)			
28	Presence of spill kits that are appropriate to the chemical hazards			
29	Hot surfaces adequately labeled & controlled			
30	Sharps containers used (biohazard label defaced for non-biohazardous sharps)			
31	Broken glass containers used (cardboard boxes)			

**Office spaces: use 1-13 Sat = Satisfactory, NI = Needs Improvement, NA = Not Applicable**

Notes, comments & corrective actions

*Give cc of completed form to responsible person & Larry McLouth (Mail Stop 90 G). Keep cc in your files*

## Appendix 3 a

# PROJECT/FACILITY SAFETY REVIEW QUESTIONNAIRE

Project Name: \_\_\_\_\_

Sponsoring Agency: \_\_\_\_\_

PI or Project Leader: BG \_\_\_\_\_ or Project No. \_\_\_\_\_

1. Which best describes this project/facility (number in sequence if more than one applies)?

- ☐ computation or theory      ☐ hardware design, fabrication, or testing  
☐ experimental work at LBL ☐ off-site work (where?) \_\_\_\_\_

2. Staffing (FTE): \_\_\_\_\_ Div. Staff : \_\_\_\_\_ GSRA's \_\_\_\_\_ Other LBL (matrixed) \_\_\_\_\_ Guests

3. What building(s) and room(s) does this project/facility occupy? \_\_\_\_\_

4. Does this project/facility need/have **Activity Hazard Document?** ☐ yes ☐ no ☐ don't know

**Radiological Work Authorization?** ☐ yes ☐ no ☐ don't know

**Sealed Source Authorizations?** ☐ yes ☐ no ☐ don't know

5. Does this project currently have other **Safety Documents**, or **Environmental Permits**?

☐ yes ☐ no ☐ don't know.

6. Which of the following hazards apply to this project? (check all that apply):

- ☐ Compressed gas  
☐ Chemical hazards (e.g. toxic, carcinogenic, caustic, explosive)  
☐ Electrical (including stored energy)  
☐ Fire (flammability) hazards  
☐ Radiation hazards (sealed sources, isotopes, X-ray sources, work at accelerators)  
☐ High voltage or High current (add description) \_\_\_\_\_  
☐ High pressure gas or fluid ( $\geq 150$  psi gas,  $\geq 1500$  psi liquid)  
☐ Laser (class 3 or 4)  
☐ High or low temperatures (e.g. heated device or cryogenic fluid)  
☐ Heavy objects (requiring crane or other moving equipment)  
☐ High power RF fields (add field strength) \_\_\_\_\_  
☐ Possible oxygen deficiency or confined space  
☐ Bio-hazards (BSL 2, 3, or 4)  
☐ Possible Environmental Impacts  
☐ Ergonomics (e.g. VDT's, extensive keyboard use, back injury hazards)  
☐ Personal Protection Equipment (e.g. ear protectors, respirators, gloves)  
☐ Work from heights

7. Give a short listing of safety measures taken to reduce the risks associated with the hazards indicated in #6 above (e.g. interlocks, gas detectors, safety reviews, training, etc.).

\_\_\_\_\_

8. Name of designated safety contact person for the project/facility? \_\_\_\_\_

9. Will this project generate hazardous waste? ☐ yes ☐ no

10. If hazardous waste will be generated, provide the following information:

Type of waste: \_\_\_\_\_ Annual Amount: \_\_\_\_\_

Location of SAA (Building & Room): \_\_\_\_\_

Signature of Project Leader: \_\_\_\_\_ Date: \_\_\_\_\_

Division Safety Coordinator: \_\_\_\_\_ Date: \_\_\_\_\_

Referred/Reviewed by EH&S Professionals \_\_\_\_\_ Date: \_\_\_\_\_

(as applicable)

## Appendix 3 b

### Off-Site Safety and Environmental Protection Plan (OSSEPP)



## 2. HAZARDS AND CONTROLS

### SITE-SPECIFIC HAZARDS (Identify)

Climate:

Physical:

Chemical:

Biological:

### WORK-SPECIFIC HAZARDS (Identify hazards or indicate N/A if not applicable)

Off-road travel:

Mechanical:

Electrical:

Chemical:

Trenching & excavation:

Confined space:

Rigging:

High pressure:

Hazardous environmental  
conditions:

Laser:

Radiation:

Hazardous materials:

Fire:

Use of boat:

Use of aircraft:

Other:

### EMERGENCY RESOURCES LOCATION AND CONTACTS

Nearest telephone:

Nearest first aid station or ambulance service:

Nearest hospital or clinic:

Nearest garage or towing service:

Nearest law enforcement:

Suggested emergency evacuation route and meeting area:

Nearest potable water:

### ON-SITE COMMUNICATIONS

Cellular telephone number(s):

Radio channel(s):

LBNL – Earths Science Division  
**Off-Site Safety and Environmental Protection**

**1. PROJECT IDENTIFICATION**

Project Title:

Account:

Principal Investigator:

Site:

Site Owner or Managing Agency:

Is LBNL the primary site manager?

If not, who is?

Collaborating Organizations:

Summary Description of Site and Work:

Reference Scope of Work and Date:

### 3. REQUIRED SAFETY TRAINING AND PERSONAL PROTECTIVE EQUIPMENT

All site personnel **must** have training in:

First Aid	_____
CPR	_____
Fire Extinguisher	_____

Additional General Safety Training:

Required Safety Training for special task or special zone personnel:

*If safety training is required by host organization attach document (e.g. memo from host).*

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE required for all persons on-site:

PPE required for personnel working on special tasks or in special zones:

#### **4. OTHER MEASURES TO REDUCE IDENTIFIED RISKS**

Site-Specific Hazards

Work-Specific Hazards

Hazardous Waste Site Attachment

If the site is known or suspected to contain hazardous waste and LBNL-ESD is the primary site manager, attach completed site-specific safety plan, as required by 29 CFR 1910.120.

**5. SITE PERSONNEL (LBNL AND OTHER)**

Site Manager:  
Site Safety Officer (SSO):  
Other Personnel:  
Name, Organization, Title or Job Description, Status

*Attach additional sheets as needed and safety training records of all LBNL and UC personnel.*

Primary Emergency Contact at LBNL: Ext.  
Alternate Emergency Contact at LBNL: Ext.

**6. ENVIRONMENTAL PROTECTION**  
**POTENTIAL THREATS TO THE ENVIRONMENT**

Fluid injection or withdrawal:  
  
Tracer release:  
  
Biotic sample collection:  
  
Threatened or endangered species present:  
  
Protected wetland:  
  
Surface water:  
  
Archeological resources:  
  
Other:

## 7. SITE AND WORK CLEARANCES AND PERMITS

	Required?	Prepared by	Date
Owner Permission	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
Utilities Screening	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
Dig or Drill Permit	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
Blasting Permit	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
USEPA	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
Water Quality Board	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
Air Quality Board	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
US Fish & Wildlife	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
Cal Fish & Game	<input type="checkbox"/> No <input type="checkbox"/> Yes	_____	_____
Other _____		_____	_____
Other _____		_____	_____
Other _____		_____	_____

*Attach or reference copies of permits, MOUs, etc.*

## 8. POTENTIAL ENVIRONMENTAL DAMAGE & MITIGATION MEASURES:

## 9. OPERATIONS SCHEDULE:



## 12. ATTACHMENTS

ITEMIZE ALL ATTACHMENTS HERE:

### BIOLOGICAL:

Ticks- Exposure to ticks which may harbor the bacteria responsible for Lyme disease can be found in the western states, particularly Northern California, northeast states, and north-central states. Precautionary measures to prevent exposure include:

- \* Wear light-colored clothing so that ticks can be spotted more easily.
- \* Tuck pant legs into socks or boots and shirt into pants.
- \* Spray insect repellent containing DEET on clothes and on exposed skin other than the face.
- \* Wear a hat and a long-sleeved shirt for added protection.
- \* Walk in the center of trails to avoid overhanging grass and brush.
- \* Inspect the backs of co-workers during the day.

After being outdoors, remove clothing and wash and dry it at a high temperature; inspect body carefully and remove attached ticks with tweezers, grasping the tick as close to the skin surface as possible and pulling straight back with a slow steady force; avoid crushing the tick's body.

Early Lyme Disease: The early stage of Lyme disease is usually marked by one or more of the following symptoms and signs:

- \* fatigue
- \* chills and fever
- \* headache
- \* muscle and joint pain
- \* swollen lymph nodes
- \* a characteristic skin rash, called erythema migrans.

Erythema migrans is a red circular patch that appears usually 3 days to 1 month after the bite of an infected tick at the site of the bite. The patch then expands, often to a large size. Sometimes many patches appear, varying in shape, depending on their location. The center of the rash may clear as it enlarges, resulting in a bulls-eye appearance. Not all rashes that occur at the site of a tick bite are due to Lyme disease, however. For example, an allergic reaction to tick saliva often occurs at the site of a tick bite. Allergic reactions to tick saliva usually occur within hours to a few days after the tick bite, usually do not expand, and disappear within a few days. Any signs or symptoms of Lyme Disease occurring after a tick bite should be evaluated by a physician.

Snakes- Two families of venomous snakes are native to the United States. The vast majority are pit vipers, of the family Crotalidae, which include rattlesnakes, copperheads and cottonmouths (water moccasins). About 99 percent of the venomous bites in this country are from pit vipers. Some snakes carry a neurotoxic venom that can affect the brain or spinal cord. Copperheads, on the other hand, have a milder and less dangerous venom that sometimes may not require antivenin treatment. The other family of domestic poisonous snakes is Elapidae, which includes two species of coral snakes found chiefly in the Southern states. Though coral snakebites are rare in the United States--only about 25 a year by some estimates--the snake's neurotoxic venom can be dangerous. A 1987 study in the Journal of the American Medical Association examined 39 victims of coral snakebites. There were no deaths, but several victims experienced respiratory paralysis, one of the hazards of neurotoxic venom. Some bites, such as those inflicted when snakes are accidentally stepped on or encountered in wilderness settings, are nearly impossible to prevent. But the following precautions can lower the risk of being bitten:

- \* Leave snakes alone.
- \* Stay out of tall grass unless you wear thick leather boots, and remain on paths as much as possible.
- \* Keep hands and feet out of areas you can't see.
- \* Be cautious and alert when climbing rocks.

According to the American Red Cross, these steps should be taken if bitten by a poisonous snake:

- \* Wash the bite with soap and water.
  - \* Immobilize the bitten area and keep it lower than the heart.
  - \* Get medical help.
  - \* If a victim is unable to reach medical care within 30 minutes, a bandage, wrapped two to four inches above the bite, may help slow venom. The bandage should not cut off blood flow from a vein or artery. A good rule of thumb is to make the band loose enough that a finger can slip under it.
  - \* A suction device may be placed over the bite to help draw venom out of the wound without making cuts.
- Suction instruments often are included in commercial snakebite kits.



## HEAT:

Exposure to high temperatures without adequate fluid intake or breaks can result in heat exhaustion or heat stroke.

Heat exhaustion - is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. A worker suffering from heat exhaustion still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal or only slightly elevated.

In most cases, treatment involves having the victim rest in a cool place and drink plenty of liquids. Victims with mild cases of heat exhaustion usually recover spontaneously with this treatment. Those with severe cases may require extended care for several days. There are no known permanent effects.

Heat stroke - is the most serious of health problems associated with working in hot environments. It occurs when the body's temperature regulatory system fails and sweating becomes inadequate. The body's only effective means of removing excess heat is compromised with little warning to the victim that a crisis stage has been reached.

A heat stroke victim's skin is hot, usually dry, red or spotted. Body temperature is usually 105°F or higher, and the victim is mentally confused, delirious, perhaps in convulsions, or unconscious. Unless the victim receives quick and appropriate treatment, death can occur.

Any person with signs or symptoms of heat stroke requires immediate hospitalization. However, first aid should be immediately administered. This includes removing the victim to a cool area, thoroughly soaking the clothing with water, and vigorously fanning the body to increase cooling.

Further treatment at a medical facility should be directed to the continuation of the cooling process and the monitoring of complications which often accompany the heat stroke. Early recognition and treatment of heat stroke are the only means of preventing permanent brain damage or death.

## COLD:

Common harmful effects of cold include frostbite and general hypothermia.

Frostbite - occurs when skin tissue actually freezes and cell damage results. Fingers, toes, cheeks, nose, and ears are primarily affected. The symptoms of frostbite include uncomfortable sensations of coldness; there may be a tingling, stinging, or aching feeling followed by numbness. Initially the frostbitten area appears white and is cold to the touch. This is followed by heat, redness, and swelling. Occasionally a victim may not be aware of the frostbite.

Tissue damage can be mild and reversible or severe, resulting in scarring and tissue death. Amputation or loss of function can be an unfortunate result. First aid includes treating affected areas with warm water at 102° to 110°F. Be careful to avoid rubbing frostbitten areas because this can lead to greater tissue injury. If there is a chance for refreezing, do not rewarm the affected areas.

General hypothermia - is the progressive loss of body heat with prolonged exposure to cold. Body heat loss is accelerated more rapidly when a person is wet because of sweat or working in a damp environment. Most cases of hypothermia develop in air temperatures between 30° & 50°F, but significant hypothermia can occur with air temperatures as high as 65°F (particularly when clothing is wet), or in the water at 72 degrees F.

The first symptoms of hypothermia are uncontrollable shivering and feeling of cold. As the body's temperature continues to drop, an individual can become confused, careless, and disoriented. At this point a person may make little or no effort to avoid further exposure to the cold. For those working around machinery or animals, accidental injury is an additional risk. When the core body temperature falls below 86°F, the body's adaptive mechanisms for reducing heat loss become ineffective and death can occur.

Individuals experiencing mild hypothermia should be immediately moved to a warm, dry shelter. Further heat loss is minimized by removing wet clothing and applying warm blankets for insulation. Warm, nonalcoholic, caffeine-free drinks may be offered. More severe cases of hypothermia require intensive medical care.

## **Appendix 4**

### **ESD WORK REQUIRING ADDITIONAL SAFETY DOCUMENTATION AND APPROVALS**

In accordance with PUB-3000, the following safety authorizations have been approved by the EH&S Division for ESD:

#### **Activity Hazards Documents (AHD)**

No active AHDs

#### **Radiological Work Authorizations (RWA)**

#1107 (08/02/99). Class I (RENEWAL) Desorption of U on soil, Tetsu Tokunaga, 70-131

#1016 (7/2/1999), Class I (RENEWAL) Uptake of organic compounds labeled with C-14, H.Y. Holman, 70-166 and 6 (ALS) Beamline 1.4

#1125 (3/01), Class I (NEW) Use of U Spectroscopic Solution” J. Christensen, 70A-4429

#### **Sealed Source Authorizations (SSA)**

S140 (05/11/01), Susan Hubbard, custodian, Class II

Source 4694: 70A-4463

Source 4885: 14-134

In accordance with ESD policy and procedures, the following Off-Site Safety and Environmental Protection Plans (OSSEPPs) were prepared and approved since the September 2000 Self-Assessment:

OSSEPP numbers 01-01 through 01-04 in FY2001.

## Appendix 5

### DRAFT ESD PREVENTIVE ERGONOMICS SURVEY FORM

Employee Name: \_\_\_\_\_ Ext: \_\_\_\_\_ Location (Bldg. & Room #): \_\_\_\_\_ Date: \_\_\_\_\_

Supervisor Name: \_\_\_\_\_ Ext: \_\_\_\_\_ Department/Program: \_\_\_\_\_

1. Where do you work ? Office Area \_\_\_\_\_ Laboratory Area \_\_\_\_\_ Other (describe): \_\_\_\_\_

2. What type of computer(s) do you use? (check all that apply) Single Desktop Computer \_\_\_\_\_ Workstation w/ multiple computers \_\_\_\_\_  
Multiple Workstation Locations \_\_\_\_\_ Laptop \_\_\_\_\_

3. Is your average daily computer use > 4 hours? YES \_\_\_\_\_ NO \_\_\_\_\_

4. Do you have a telecommute agreement? YES \_\_\_\_\_ NO \_\_\_\_\_

5. What other type of work do you do routinely? Heavy Phone Work \_\_\_\_\_ Filing \_\_\_\_\_ Adding Machine \_\_\_\_\_ Use Hand Tools \_\_\_\_\_  
Manual Lifting \_\_\_\_\_ Other (describe): \_\_\_\_\_

6. Do you have pain or discomfort that you feel may be associated with your work? YES \_\_\_\_\_ NO \_\_\_\_\_

[If yes, describe discomfort: \_\_\_\_\_

7. How would you rate your workspace?

\_\_\_\_\_ I feel my computer workstation set-up is satisfactory

\_\_\_\_\_ I would like to request ergonomic accessories: wrist rest \_\_\_\_\_ alternate keyboard \_\_\_\_\_ alternate pointing device \_\_\_\_\_  
document stand \_\_\_\_\_ anti-glare screen \_\_\_\_\_ task light \_\_\_\_\_ monitor riser \_\_\_\_\_ ergonomic chair \_\_\_\_\_  
foot rest \_\_\_\_\_ articulating keyboard tray \_\_\_\_\_ other \_\_\_\_\_

\_\_\_\_\_ I would like to request an ergonomic evaluation of my computer workstation

**Appendix 5**  
**ESD Ergonomics Initiative**  
**ESD Safety Committee**  
June 19, 2001

Why?

- A lot of poor work station set ups in ESD
- This was a finding during the MESH review

Proposed approach (modeled after EETD and PGF)

- Develop survey form
- Distribute to personnel
- Evaluate responses
- Determine need for conducting ergo evals (EH&S Ergo personnel can help)
- Identify the type of furniture and accessories needed
- Establish a basic set up and cost estimate
- Identify furniture make and models for chairs, tables, keyboard trays/arms.....
- EETD estimates \$950 for a basic set up. Includes chair, table, articulating arm and tray and assembly/installation by Facilities

**Appendix 6**  
**ESD SAA Custodians**

<b>Location</b>	<b>SAA Custodian</b>
51-007	Tim Kneafsey
64 Hi Bay	Victor Gruol
70-108	Donna Smith
70-114	Joern Larsen
70-116	Tetsu Tokunaga
70-120	Glenn Waychunas
70-131	Jackie Pena
70-143	Max Hu
70-158	Donna Smith
70-166	Hoi-Ying Holman
70-173	Terry Hazen KC Oh
70-279	Dale Perry
70 A 4403	Tara Macomber
70 A 4405	Todd Wood
70 A-4419	Madhav Machavaram
70A-4429	John Christensen
70A-4431	Madhav Machavaram
70A-4463	Sharon Borgland